

## CLAIMS

What is claimed is:

1. A method of providing data transmission across a computer network, the method comprising:

    creating a plurality of tunnels across a computer network to connect a first computer to a second computer, the plurality of tunnels including a tunnel for each link in a link aggregation of a plurality of transmission protocols;

    connecting a first computer at a first site with a second computer at a second site; the connection made via the computer network; and  
    transmitting packets end-to-end from the first computer to the second computer in a manner characterized that the computer network preserves a connection from the first computer to the second computer without terminating the connection at the inbound edge of the computer network, the packets conforming to protocols in the plurality of transmission protocols.

2. The method of claim 1, wherein the plurality of transmission protocols comprises LACP protocol, and packets are transmitted in accordance with the LACP protocol to perform Ethernet loadsharing across multiple links.

3. The method of claim 1, wherein the plurality of transmission protocols comprises PAgP protocol, and packets are transmitted in accordance with the PAgP protocol to perform Ethernet loadsharing across multiple links.

4. The method of claim 1, wherein the plurality of transmission protocols comprises UDLD protocol, and packets are transmitted in accordance with the UDLD protocol to perform unidirectional link detection.

5. The method of claim 1, wherein a unique ISP access VLAN is assigned to each connection between corresponding Etherchannel ports.

6. The method of claim 1, further comprising monitoring the computer network to detect multipoint protocol tunneling.

7. The method of claim 6, wherein the monitoring is performed on a per-interface basis.

8. The method of claim 6, wherein the monitoring is performed by examining a source media access control address on a transmitted protocol data unit.

9. The method of claim 8, wherein the source media access control address is recorded as a multipoint protocol tunneling reference, and an aging timer is set to a minimum time that is longer than a longest expected transmission time for the transmitted protocol data unit.
10. The method of claim 9, wherein, before expiration of the aging timer, all packets arriving with a source media access control address other than the reference are dropped.
11. The method of claim 9, wherein, after expiration of the aging timer, the first packet arriving after expiration of the aging timer provides its source media access control address as the next multipoint protocol tunneling reference.
12. The method of claim 6, wherein a report is generated upon detection of multipoint protocol tunneling.
13. The method of claim 6, wherein multipoint protocol tunneling detection is performed on a per-protocol basis.
14. The method of claim 6, wherein multipoint protocol tunneling detection is performed on a per-port basis.
15. A computer program product containing instructions which, when executed by at least one computer, provides data transmission across a computer network by performing the acts of:
  - creating a plurality of tunnels across a computer network to connect a first computer to a second computer, the plurality of tunnels including a tunnel for each link in a link aggregation of a plurality of transmission protocols;
  - connecting a first computer at a first site with a second computer at a second site; the connection made via the computer network; and
  - transmitting packets end-to-end from the first computer to the second computer in a manner characterized that the computer network preserves a connection from the first computer to the second computer without terminating the connection at the inbound edge of the computer network, the packets conforming to protocols in the plurality of transmission protocols.
16. The product of claim 15, wherein the plurality of transmission protocols comprises LACP protocol, and packets are transmitted in accordance with the LACP protocol to perform Ethernet loadsharing across multiple links.

17. The product of claim 15, wherein the plurality of transmission protocols comprises PAgP protocol, and packets are transmitted in accordance with the PAgP protocol to perform Ethernet loadsharing across multiple links.
18. The product of claim 15, wherein the plurality of transmission protocols comprises UDLD protocol, and packets are transmitted in accordance with the UDLD protocol to perform unidirectional link detection.
19. The product of claim 15, wherein a unique ISP access VLAN is assigned to each connection between corresponding Etherchannel ports.
20. The product of claim 15, further comprising monitoring the computer network to detect multipoint protocol tunneling.
21. The product of claim 20, wherein the monitoring is performed on a per-interface basis.
22. The product of claim 20, wherein the monitoring is performed by examining a source media access control address on a transmitted protocol data unit.
23. The product of claim 22, wherein the source media access control address is recorded as a multipoint protocol tunneling reference, and an aging timer is set to a minimum time that is longer than a longest expected transmission time for the transmitted protocol data unit.
24. The product of claim 23, wherein, before expiration of the aging timer, all packets arriving with a source media access control address other than the reference are dropped.
25. The product of claim 23, wherein, after expiration of the aging timer, the first packet arriving after expiration of the aging timer provides its source media access control address as the next multipoint protocol tunneling reference.
26. The product of claim 20, wherein a report is generated upon detection of multipoint protocol tunneling.
27. The product of claim 20, wherein multipoint protocol tunneling detection is performed on a per-protocol basis.
28. The product of claim 20, wherein multipoint protocol tunneling detection is performed on a per-port basis.

29. A computer network for connecting computers at different sites with each other, the computer network comprising:

means for creating a plurality of tunnels across a computer network to connect a first computer to a second computer, the plurality of tunnels including a tunnel for each link in a link aggregation of a plurality of transmission protocols;

means for connecting a first computer at a first site with a second computer at a second site; the connection made via the computer network; and

means for transmitting packets end-to-end from the first computer to the second computer in a manner characterized that the computer network preserves a connection from the first computer to the second computer without terminating the connection at the inbound edge of the computer network, the packets conforming to protocols in the plurality of transmission protocols.